## REMARKS

Further consideration of this application courteously is solicited. By this paper, independent claims 38 and 39 are amended. New claims 59 and 60 have been added. Care has been taken to avoid the introduction of any new matter.

The Office Action of August 7, 2007 made a single rejection of claims 38 and 39. These were asserted as obvious under 35 U.S.C. § 103(a) over the IBM article in view of U. S. Patent 5,679,152 to Tischler. This rejection is traversed.

As amended, the claims emphasize three important points. First, as amended, independent claims 38 and 39 specify that during ingot "forming," the "rotary support member is at a certain distance from said gas introducing port."[1] Support for this description comes directly from Applicants' Fig. 2 showing mounting of the GaAs substrate 2 on the rotary support member 65. Member 65 holds the substrate 2 at a given distance from each of inlet ports 51, 53, and 55. Additionally, Applicants refer to paragraph [0059] of their published specification. The last sentence thereof mentions the support member 65 and the substrate 2 as disposed within the reaction chamber 59.

As so amended, claims 38 and 39 patentably distinguish over the asserted combination of IBM and Tischler because neither disclosure teaches or suggests Applicants' requirement for holding the substrate at a (preset) certain distance from a gas inlet port during an ingot formation. Rather, the IBM disclosure, teaches, to those of ordinary skill in the art, that the substrate holder retracts at a certain rate during crystal growth, namely at a rate equal to the GaN growth rate. Applicants refer to pages 29 and 30 of the IBM disclosure. Further, to those of ordinary skill in the art, the IBM article teaches a technique that produces GaN boules having insulating qualities, or p-type conductivites.

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[1] Antecedent basis for major elements of the growth apparatus, including the rotary support member and the gas introducing port also is now provided in each of claims 38 and 39.

Tischler does not remedy the deficiencies of the IBM disclosure with respect to claims 38 and 39. Rather, Tischler describes a technique for hetero-growth. Tischler fails to teach or suggest Applicants' single crystal substrate method employing their ingot forming step as now described.

For at least these reasons, Applicants courteously submit that independent claims 38 and 39 patentably distinguish over the asserted combination of IBM and Tischler. Hence, withdrawal of this rejection courteously is solicited.

New claims 59 and 60, although dependent, recite independently patentable subject matter over IBM and Tischler. Apart from their respective dependencies, claims 59 and 60 are identical. They define the growth apparatus as a "vertical furnace," and define the growing technique for the epitaxial layer as by Hydride Vapor Phase Epitaxy (HVPE). According to Applicants' method as so claimed, Applicants produce a GaN single crystal substrate that has an n-type carrier concentration within a range of $1x10^{16}$ $cm^{-3}$ to $1x10^{20}$ $cm^{-3}$, an electron mobility within a range of 60 $cm^2/Vs$ to 800 $cm^2/Vs$, and a resistivity within a range of $1x10^{-4}$ Ωcm to 1x10Ωcm. Neither IBM nor Tischler teaches or suggests Applicants' method to those of ordinary skill. As mentioned above, to the contrary, IBM teaches, to those of ordinary skill in the art, techniques which result in GaN boules having insulating or even p-type conductivities. Hence, dependent claims 59 and 60 likewise are submitted as patentable.

In view of the foregoing amendments and remarks, it courteously is urged that all of the claims are allowable and that this application is in condition for allowance. Favorable action in this regard earnestly is solicited.

Respectfully submitted,

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